

In re Patent Application of:  
**CAIN ET AL.**  
Serial No. 10/658,357  
Filing Date: **SEPTEMBER 9, 2003**

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#### REMARKS

The Examiner is thanked for the thorough examination of the present application. The Examiner has objected to FIGS. 1 and 3-7 contending that the "legends are not complete." Office Action, at 2. Applicants believe the Examiner may be objecting to the originally filed informal drawings. However, Applicants filed formal drawings for the above-noted application on October 20, 2003 which label every illustrated element completely in accordance with the USPTO rules for drawings. Accordingly, Applicants do not believe that any corrections to the drawings are required, and respectfully request that this objection be withdrawn. If the Examiner has any specific concerns about the drawings, or requires another copy of the formal drawings, it is requested that the Examiner contact the undersigned attorney at the telephone number listed below. The abstract has also been amended to remove the title as requested by the Examiner and is attached hereto on a separate sheet of paper.

In view of the arguments presented in detail below, it is submitted that all of the claims are patentable.

#### I. The Claimed Invention

The present invention is directed to a mobile ad hoc network (MANET). As recited in independent Claim 1, for example, the MANET includes a plurality of mobile nodes each including a wireless communications device and a controller connected thereto. In particular, the controller operates in accordance with a multi-layer protocol hierarchy for, at an upper protocol

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layer, establishing a quality-of-service (QoS) threshold, and, at at least one intermediate protocol layer below the upper protocol layer, determining whether a QoS metric for at least one selected route from at least one source mobile node falls below the QoS threshold. Further, at a lower protocol layer below the at least one intermediate protocol layer, the controller cooperates with the wireless communications device to determine the QoS metric for the at least one selected route, receive data from the at least one source mobile node via the at least one selected route, and adjust signal reception gain based upon a determination that the QoS metric has fallen below the QoS threshold.

## **II. The Claims Are Patentable**

The Examiner rejected independent Claims 1, 7, 12, and 18 over U.S. Patent Publication No. 2003/0161268 to Larson et al. This publication is directed to a cross-layer integration of functions on three or more protocol layers of a multi-hop network into a single unified mechanism. The protocol layers include the network layer, the link layer and the physical layer. Larson et al. teaches that "in effect, the unified approach of the invention partially or completely eliminates the need for a layered representation. Instead of having several separate optimization algorithms executing more or less independently on the different protocol layers, a single unified optimization is performed." Larson et al., paragraph 0052. Moreover, routing, channel access, physical layer functions and admission control

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are integrated into a single, unified mechanism by using connection parameters including path, channel and one or more physical layer/link parameters.

The Examiner contends that Larson et al. teaches establishing a QoS threshold at an upper protocol layer as recited in the above-noted independent claims. As support, the Examiner cites paragraph 0179, lines 5-14 of Larson et al., which are reproduced below:

"For instance, the application layer may house an adaptive application, able to operate under different data rates but with an application quality associated and compatible with the used data rate. Many video and voice based applications are good examples of adaptive applications that enable multiple data rates. More particularly, when a new connection set-up is attempted, the optimisation [sic] of the objective function (or the algorithm) is performed with respect to multiple data rate requirements (given by the application layer)."

In particular, the Examiner contends that this adaptive application which operates under "different data rates" with an "application quality" associated therewith somehow constitutes establishing a QoS threshold as recited in the above-noted independent claims.

It is respectfully submitted that the Examiner mischaracterizes the teachings of Larson et al. What Larson et al. appears to teach in the above-noted text is that the adaptive application running on the application layer (e.g., a video or

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voice-based application) maintains a particular level of application quality despite being used with different data rates. This is not establishing a QoS threshold that pertains to route quality. That is, the above-noted independent claims recite that at at least one intermediate protocol layer below the upper protocol layer a determination is made whether a QoS route metric for a selected route(s) falls below the QoS threshold. Moreover, at a lower protocol layer, signal reception gain is adjusted based upon a determination that the QoS metric has fallen below the QoS threshold.

Neither the above-quoted text nor any other text in Larson et al. teaches that a QoS threshold is established at an upper protocol layer, and that the established QoS threshold is used in an intermediate protocol layer determination and for adjusting signal reception gain at a lower protocol layer. Since the remaining prior art of record fails to teach or fairly suggest these noted deficiencies, it is respectfully submitted that independent Claims 1, 7, 12, and 18 are patentable over the prior art. Their respective dependent claims, which recite yet further distinguishing features, are also patentable over the prior art and require no further discussion herein.

#### CONCLUSIONS

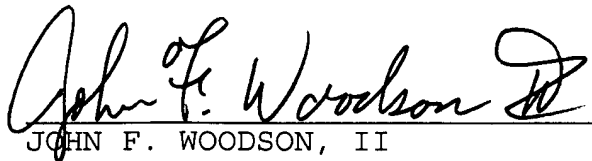
In view of the foregoing, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. Should any minor informalities need to be addressed, the Examiner is encouraged to

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contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

A handwritten signature in cursive script, reading "John F. Woodson II", is written over a horizontal line.

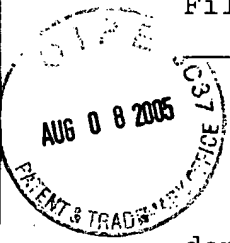
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**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: MS Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 5<sup>th</sup> day of August, 2005.

A handwritten signature in cursive script, appearing to read "Justin Dorn", written over a horizontal line.